

What is claimed is:

1. A method of preparing a block copolymer having at least one hydrophilic block and one olefinic block comprising polymerizing a liquid hydrophilic monomer under polymerization conditions in the presence of a dithio-containing control agent to create said at least one hydrophilic block and subsequently reacting said at least one hydrophilic block with an olefin monomer capable of free radical polymerization under polymerization conditions to form said at least one olefinic block,  
wherein said block copolymer can change the surface tension of an olefinic substrate by an amount of at least 10 mN/m.
2. The method of claim 1, wherein said at least one hydrophilic block is prepared from vinyl acetate monomer.
3. The method of claim 1, wherein said at least one hydrophilic block is prepared from an acrylic monomer.
4. The method of claim 1, wherein said at least one olefinic block is prepared from ethylene.
5. The method of claim 1, wherein said at least one olefinic block is prepared from butadiene.
6. The method of claim 1, further comprising at least partially hydrogenating said olefinic block.
7. The method of claim 1, wherein said block copolymer can cause a LDPE substrate to have a classification of at least 3B on the cross cut adhesion test when coated on the substrate.
8. The method of claim 1, wherein said polymerization conditions during the polymerization of the olefinic block allow for control of the molecular weight of said olefinic block.

9. The method of claim 1, wherein said polymerization conditions during the polymerization of the at least one hydrophilic block allow for control of the molecular weight of said hydrophilic block.

10. A block copolymer prepared by the method of claim 1.

11. A block copolymer of polyethylene and polyvinyl acetate prepared by the method of claim 1.

12. A method of preparing a block copolymer having at least one hydrophilic block and one olefinic block comprising polymerizing an olefinic monomer under free radical polymerization conditions in the presence of a dithio-containing control agent to create said at least one olefinic block and

subsequently reacting said at least one olefinic block with a hydrophilic monomer capable of free radical polymerization under polymerization conditions to form said at least one hydrophilic block.

13. The method of claim 12, wherein said at least one hydrophilic block is prepared from an acrylic monomer.

14. The method of claim 12, wherein said at least one hydrophilic block is prepared from vinyl acetate monomer.

15. The method of claim 12, wherein said at least one olefinic block is prepared from butadiene.

16. The method of claim 12, further comprising at least partially hydrogenating said olefinic block.

17. The method of claim 1, wherein said block copolymer can cause a LDPE substrate to have a classification of at least 3B on the cross cut adhesion test when coated on the substrate.

18. The method of claim 12, wherein said polymerization conditions during the polymerization of the olefinic block allow for control of the molecular weight of said olefinic block.

19. The method of claim 12, wherein said polymerization conditions during the polymerization of the at least one hydrophilic block allow for control of the molecular weight of said hydrophilic block.

20. A block copolymer prepared by the method of claim 12.

21. A block copolymer of polybutadiene and polyethyl acrylate prepared the method of claim 12.

22. A method of preparing a block copolymer having at least one hydrophilic block and the structure A-R, wherein R represents a random block comprising at least two monomers, the method comprising polymerizing a hydrophilic monomer under free radical polymerization conditions in the presence of a dithio-containing control agent to create said at least one hydrophilic block and subsequently reacting said at least one hydrophilic block with at least one olefinic monomer and one monomer that is hydrophilic with respect to the olefinic monomer capable of free radical polymerization under polymerization conditions to form said at least one random block, and at least partially hydrogenating said random block.